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PATENT SPECIFICATION

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(54) COMPOSITION FOR KEEPING FLOWERS FRESH

(71) We, LONZA LTD., of Gampel/Valais, Switzerland, a Joint-Stock Company organised under the laws of Switzerland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention is concerned with a composition for keeping flowers fresh, which composition is in a convenient and readily usable form and also immediately liberates the active components present therein.

The composition according to the present invention for keeping flowers fresh is in the form of an effervescent tablet which comprises the following components, the percentages being by weight:

- 50—75% glucose monohydrate
- 7—20% potassium bicarbonate
- 10—20% of a solid dicarboxylic acid, preferably succinic acid
- 0—5% citric acid
- 1—5% potassium chloride
- 25 1—5% aluminium sulphate octadecahydrate
- 0.05—0.5% of a fungicide

A preferred composition according to the present invention comprises the following components, the percentages again being by weight:

- 65—75% glucose monohydrate
- 8—13% potassium bicarbonate
- 11—15% of a solid dicarboxylic acid, preferably succinic acid
- 2—3% citric acid
- 3—5% potassium chloride
- 1—2% aluminium sulphate octadecahydrate
- 40 0.1—0.2% of a fungicide.

The fungicide employed in the composition according to the present invention is preferably a quaternary ammonium compound, containing an alkyl radical with at least 8 carbon atoms and can be, for example, one of the following:

Barquat MS—100 = myristyl dimethyl benyl ammonium chloride dihydrate.

Bardac 22 = didecyl dimethyl ammonium chloride.

Bardac 20 = a mixture of 50% by weight octyl decyl dimethyl ammonium chloride; 25% by weight dioctyl dimethyl ammonium chloride and 25% by weight didecyl dimethyl ammonium chloride.

"Bardac" is a registered Trade Mark.

Furthermore, growth regulating agents, such as chloromethyl trimethyl ammonium chloride, can, if desired, also be added.

The production of effervescent tablets from bicarbonates and solid organic carboxylic acids is admittedly known but not in combination with the other components mentioned above with the purpose of providing a composition for keeping flowers fresh. In the same way, some of the active components of the above-described mixture in compositions for keeping flowers fresh have also already been suggested for the same purpose but not in the form of the above-defined composition.

Compositions containing the above components in the given ratios display a particularly good effect for keeping cut flowers fresh. Further advantages are the easy handling and, as a result of the effervescent effect, the ability to dissolve rapidly, as well as a good mixing and thus a rapid effectiveness of the active components of the effervescent tablet composition according to the present invention.

The following Examples are given for the purpose of illustrating the present invention:—

Example 1.

Direct tableting.

- 5 71.2% by weight glucose monohydrate
 10.0% by weight potassium bicarbonate
 13.0% by weight succinic acid
 4.2% by weight potassium chloride
 1.5% by weight aluminium sulphate octa-
 10 decahydrate
 0.1% by weight myristyl dimethyl benzyl
 ammonium chloride dihydrate

are individually sieved and then mixed. By the use of directly tabletable glucose, i.e. of glucose with a particular particle size, the effervescent tablets can be produced by direct pressing process (without granulation) at a relative atmospheric humidity of at most 30%.

Example 2.

Granulation process.

The potassium bicarbonate and a part of the glucose are separately granulated with the fungicide. The remaining components of the composition are also granulated and the two granulates are mixed in the desired ratio shortly before actual pressing.

Comparative test:

Groups of 5 red carnations were placed in glass vessels containing 1 litre of water and 10 g. of the test composition added thereto. For comparison, there was used tap water with 12 dH°. (12 dH° is equivalent to 120 mg. CaO/litre of water). After each day, the fresh blooms were counted, the drooping ones were removed and the contents of the glass vessels made up to 1 litre again with tap water. The following Table shows the results obtained:

TABLE

day x	number of fresh carnations on the xth day after commencement of the experiment									
	5	6	7	8	9	10	11	12	13	14
test solution	5	5	5	5	5	5	4	4	1	0
tap water	5	5	2	1	0	0	0	0	0	0

WHAT WE CLAIM IS:—

1. Composition for keeping flowers fresh which is convenient and easy to handle, immediately liberates the active components present therein and is in the form of an effervescent tablet comprising the following components, the percentages being by weight:

- 40 50—75% glucose monohydrate
 45 7—20% potassium bicarbonate
 10—20% of a solid dicarboxylic acid
 0—5% citric acid
 1—5% potassium chloride
 1—5% aluminium sulphate octadeca-
 50 hydrate
 0.05—0.5% of a fungicide.

2. Composition according to claim 1, comprising, by weight, the following components:

- 55 65—75% glucose monohydrate
 8—13% potassium bicarbonate
 11—15% of a solid dicarboxylic acid
 2—3% citric acid
 3—5% potassium chloride
 1—2% aluminium sulphate octadeca-
 60 hydrate
 0.1—0.2% of a fungicide.

3. Composition according to claim 1 or 2, wherein the solid dicarboxylic acid is succinic acid.

4. Composition according to any of the preceding claims, wherein the fungicide is a quaternary ammonium compound containing an alkyl radical with at least 8 carbon atoms.

5. Composition according to claim 4, wherein the fungicide is myristyl dimethyl benzyl ammonium chloride dihydrate, didecyl dimethyl ammonium chloride or a mixture of 50% by weight octyl decyl dimethyl ammonium chloride, 25% by weight dioctyl dimethyl ammonium chloride and 25% by weight didecyl dimethyl ammonium chloride.

6. Composition according to any of the preceding claims, wherein a growth regulator is also present.

7. Composition according to claim 6, wherein the growth regulator is chloromethyl trimethyl ammonium chloride.

8. Composition according to claim 1 for keeping flowers fresh, substantially as hereinbefore described and exemplified.

9. Flowers, whenever kept fresh with a composition according to any of claims 1 to 8.

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